COVID-19

Prehospital Care at the Epicenter of a Pandemic: The New York City EMS Response

The New York City 911 system recorded 5,700 medical calls on Tuesday, March 24, 2020, the most in recorded history.[1] On March 25, the call number increased to 5,800, then 6,200 calls on March 27 and 6,500 calls on March 30.[2]

By April 2, over 3,000 FDNY members were on leave for illness.[3] A workforce reduced by nearly 20% was therefore charged with responding to a greater than 40% increase in calls. The average prepandemic response for life-threatening medical emergencies was 6.5 minutes.[4] In April, there was a 9.5-minute average response time for medical calls in NYC. In the Bronx, it was closer to 11 minutes.[2]

Through the pandemic surge, EMS protocol changes were implemented to protect first responders and improve response to increasing call volume. However, according to many paramedics, these revisions added confusion and frustration to an already disorienting and frightening time and undermined morale as many felt helpless, restricted from intervening as patients deteriorated in front of them.

On March 6, the NYC EMS advisory committee, composed of EMS physicians, published advisory *2020-03* recommending all nebulized medications be administered via breath-actuated nebulizer, a delivery device that limits aerosolization into the environment but requires patient cooperation and is likely less effective in the critically ill.

On March 17, advisory *2020-04* recommended that EMS interview patients from six feet away and place a surgical mask on all patients with infectious symptoms, altered level of consciousness, or in cardiac arrest. The document further recommended that EMS providers wear face masks, eye protection, and gowns (if available).

On March 20, advisory *2020-5* recommended supraglottic airways in all situations when endotracheal intubation is indicated. Intubation is considered to be the highest aerosol risk of EMS-performed procedures.

On March 30, advisory *2020-07* temporarily reduced staffing standards for disaster response, permitting an ALS ambulance to respond with one paramedic and one EMT. A BLS ambulance was permitted to operate with one EMT and one certified first responder. Prior to this policy, NYC ALS ambulances in the 911 system were required to have two paramedics and BLS ambulances required two EMTs, but staffing shortages during the pandemic made this impossible.

On March 31, advisory *2020-08* implemented temporary cardiac arrest standards for the pandemic disaster response. To reduce the risk to EMS and downstream providers, adult patients in nontraumatic or blunt traumatic arrest were not to be transported to the hospital unless there was ROSC or a medical control order.

On April 1, advisory *2020-09* implemented the EMS Viral Pandemic Triage Protocol. It stipulated the following criteria for not transporting patients, i.e., leaving patients at the scene: Patient age less than 65, heart rate less than 110, systolic blood pressure greater than 100, respiratory rate less than 22, and SpO_2 at least 95%.

On April 17, advisory *2020-10* dictated that if EMS did not witness the cardiac arrest and BLS or ALS did not find a shockable rhythm, resuscitation should not be initiated. If cardiac arrest was witnessed or a shockable rhythm was present, resuscitation should be terminated after 20 minutes.

On April 23, after alarming discontent with advisory *2020-10*, advisory *2020-11* reverted the NYC region's policy to resuscitate patients in compliance with advisory *2020-08*.

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On April 27, advisory *2020-12* rescinded the implementation of the EMS viral pandemic triage protocol.

Maimonides Medical Center (MMC) is the largest hospital in Brooklyn. The 14 MMC ambulances in the 911 system typically respond to between 0 and 1 cardiac arrests per day. Starting on March 11, this increased to a peak of 19 cardiac arrest calls on April 2 (Figure 1).

Below are the reflections of several Maimonides EMS providers who worked through the COVID-19 pandemic.

Christopher Oliveri

Encountering the first critical patient who was infected with SARS-CoV-2, I was faced with a difficult choice: Place her on CPAP and increase my risk of viral exposure or watch her suffocate. After placing her on CPAP and seeing no improvement, I knew I needed to transport her quickly to the hospital. I didn't have IV access to sedate and intubate her and I soon became very frustrated. While she was in our ambulance, I tried to rush her family out so that we could start transport. After asking them several times to leave while watching my patient deteriorate, I raised my voice so they would get out of the ambulance before she died right there. When I arrived at the hospital, I was shell-shocked. I saw similar patients in her same condition and I then knew then that she wouldn't recover. She was going to die in the hospital alone. Her family's last moment with her were cut short by me. This weighs heavily on me now knowing that giving her family a few extra minutes wouldn't have made a difference for my patient's outcome but would have made a difference for them.

Jill Eby

One thing I am hearing a lot of around our EMS garage is, "Coronavirus took away our ability to have a win." EMS providers are always searching for a win . . . Getting ROSC, catching a STEMI on EKG, reversing hypoglycemia, getting a stroke patient to the ER on time, getting the tube. With this virus, there was no win . . . no chance. We understood that the frequent changes in EMS protocols were implemented as a safety measure for first responders but it still broke our collective hearts every time we couldn't try our very best to bring back someone's loved one. Three or four times a shift we had to tell someone that their loved one died without feeling confident that we did absolutely everything for them. That will stick with each and every one of us for a very

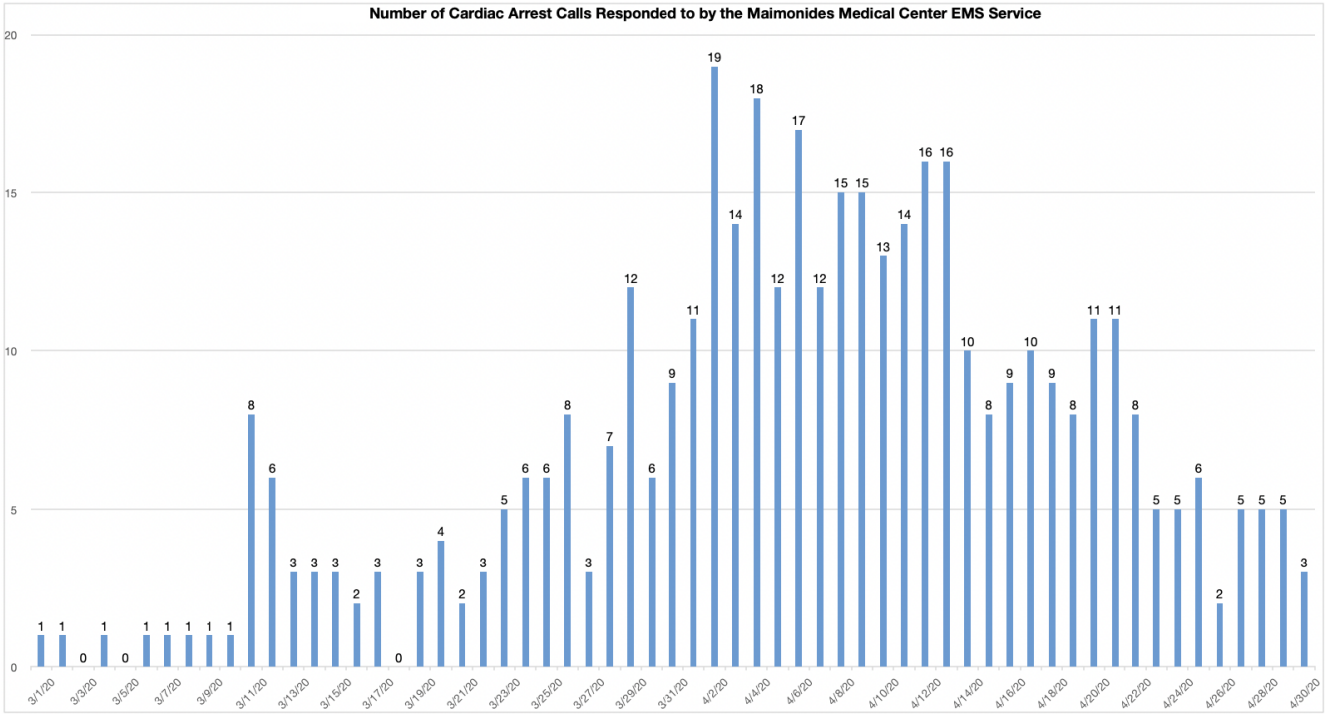

Figure 1. Number of Cardiac Arrest Calls Responded to by the Maimonides medical Center ems service. [Color figure can be viewed at wileyonlinelibrary.com]

long time. While at work, the virus took our hands and our minds away from us while instilling fear that we will kill our own family members if we go home and hug them. It hit us from all sides and I fear it will have a lasting effect on many first responders, even if they can't or won't admit it. That is the culture, unfortunately. We didn't falter during this pandemic because that's not what we do. Seeing the 911 call numbers go down and being able to actually help again—that's what will help us recover, I'm sure of it.

Kelly Vyater

When going into EMS, everyone says "you know what you signed up for." Honestly, a pandemic was not something I thought would be waiting for me. Walking into work everyday, I felt more and more ethically challenged. There were constant protocol changes asking me to deviate from what I was taught. I attempted to explain to patients that the ER, which is normally seen as a safe place, is not so safe these days.

Going into EMS, you have to be emotionally resilient. I'm usually the "roll with the punches" type of person. After working up a cardiac arrest, I've seen families cry as we tell them that we did everything we could and that takes a toll on you the first couple of times. But after a while, it becomes second nature. However, watching a family cry during this pandemic as they hug and kiss their loved one as we wheel them out the door, watching the families realize it will probably be the last time they see their loved one, that is the most psychologically painful thing I have ever experienced as a paramedic.

Avi Merl

This was in one word crazy. I have never been this physically and mentally drained ever in my life as I was through the prime time of COVID-19. There was a 40-year-old man who reported a fever and not feeling well. I applied a pulse oximeter which revealed a pulse oxygenation of 58%. The first thing I thought was, "that's impossible." The sheer amount of death we responded to was never something that I'd ever thought I see. Listening over the EMS radio, "Central, it's an 83 [patient pronounced dead]"; I heard that more times than I have heard it through my entire 25-year EMS career.

I had to explain to multiple family members that they can't come with us we as we transported their loved one to the hospital as they won't be allowed in. The worst sight for me was a little, old Italian man in his early 90s with an oxygen saturation in the 50s and his wife of 63 years scrambling around to make sure he had his hat and everything else he needs to go to the ER. And then as she grabs her coat, we explain to her that she can't accompany him because it's unsafe for her. She became visibly upset and said to me, "We are married 62 years. He has never gone to the doctor alone and he doesn't know what to say." I stood there knowing that this man is going to die alone in the hospital. And the chances are that if he's sick with COVID-19, his wife is going to be as well. I hope we never see anything like this in our time again.

Rebecca Solomon

In the middle of March 2020, life changed not just for us in health care but for everyone. My kids went from riding the bus to school to home school and online classrooms. Every day I went to work armed with new information on how this disease is making us, our colleagues, and friends sick. We have questions with no answers but we are the frontline and need to keep going. Our communities rely on us as we are the ones they seek answers from in a world that no longer makes sense.

As a paramedic in NYC during this pandemic, I watched how COVID-19 changed us. Our PPE protocols changed, our patient care protocols changed, our hospitals changed to meet the demands of a system that is being stressed to the point of nearly breaking. The worst part for me is our patients are changing. They are dying and I don't think they know it. As we respond to the residences of our patients, the families turn to us for answers. How do you tell the family that you believe their loved one has this virus? How do you tell the family that they may also have COVID-19? There is a good chance that once I transport a patient to the hospital, the family may never have their chance to say goodbye. This patient is going battle the virus alone and die alone.

There has always been a certain solace to being able to debrief "the bad" with your colleagues but that too is different. We are triaging patients in tents outside the hospital and we are covered in so much PPE that we

barely notice our colleagues anymore. All you see when you look at the frontline is their eyes. Eyes that have now seen unprecedented amounts of suffering and death.

Shmuel Gajer

There was no heroism done. Just people reacting poorly in a time of confusion. Campaigns are being run to publicize the job well done. A bunch of people at the top will pat themselves on the back. There are shoutouts to others for a job well done to make everyone feels good about themselves. Articles and blogs are being posted hourly to assist with people's insecurities and make them feel as if they did or are doing something about the situation. However we failed big time. In the end, not much will change. Next time around it will be the same.

There were constant changes in protocols and procedures that served just to increase our anxiety and confusion. We watched the dying die alone. We watched other health care workers refuse to do their jobs and help the sick appropriately. There was a lack of organization and communication by leadership, management, and politicians. We didn't know how to properly treat the sick and needy. We observed our coworkers getting really sick. We didn't have the ability to socialize and decompress with family and friends, which was especially rough in these times. We didn't transport some legitimately sick people because they weren't sick enough. We didn't feel safe due to poor PPE or psychologically safe due to how one is perceived by those who are supposedly looking out for us. We were fatigued and felt like we were operating blind in the darkness with no light in sight. Although at times we were too busy to mentally process what was happening, we mostly felt that we were left alone to fend for ourselves as we did procedures outside of our job description and scope of practice.

Henoch Junik

As a veteran soldier, I felt the call to action stronger than some. I felt like it was a time to put your head down and push on no matter what. I worked every shift that was available and sometimes had only a few hours of sleep between them. To me, the greater sacrifice was done by my family: my wife taking care of our six kids, all under six, without me and my kids not seeing their dad for days in a row. When I was home, my mind was really at work researching what news was real and what was fake so I could stay informed and safe. I feared for my family's safety more than my own.

As the call volume raised to obscene numbers, the NYC 911 system responded to more calls in one day than some EMS systems respond to in a whole year. Like war does to other industries, we began to see some "advances" to prehospital care. We were finally given the authority to act like the clinicians that we were originally trained to be. Working in a city that never sleeps, you're bound to have some anxiety in your life. For many, that anxiety came to the forefront when this pandemic began. Some EMS providers thought we were crossing ethical lines by leaving patients at home that we would have transported before the pandemic. I fear that the anxiety will stick with us for a long time and will change the way we interact going forward. However, I hope we focus more on what worked and help expand prehospital care. My military experience prepared me for the exhaustion I felt. It did not prepare me for my kids asking me when will I be home or for homeschooling and raising kids in this uncertain world. During the pandemic, most people got to spend more time with family. However, frontline workers lost time with their families and they will never get it back. And for me that is a great loss.

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